Illinois Environmental Protection Agency
1021 North Grand Avenue East
Springfield, Illinois

Project Summary for an Application for a Revision to a Existing Construction Permit for the Melt Shop at Alton Steel
Alton, Illinois

Site Identification No.: 119010AAE
Permit/Application No.: 00010015
Date Application Received: October 8, 2003

Schedule:

Public Comment Period Begins: March 20, 2006
Public Comment Period Closes: April 19, 2006

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I. INTRODUCTION

Alton Steel, Inc. has submitted an application to the Illinois EPA that requests revisions to a construction permit that was originally issued to Laclede Steel and that allowed improvements to the melt shop at its steel mill in Alton. This melt shop has two electric arc furnaces, Furnaces No. 7 and No. 8. In 2003, Alton Steel took over the operation of the steel mill from Laclede Steel and the existing air pollution control permits, including the construction permit for which Alton Steel has requested a revision, were transferred from Laclede Steel to Alton Steel.

The Illinois EPA, Bureau of Air reviews applications for air pollution control permits. The Illinois EPA has reviewed Alton Steel's application and made a preliminary determination that the requested revisions, as set forth by Alton Steel in the application, meet applicable requirements. Accordingly, the Illinois EPA has prepared a draft of the revised air pollution control construction permit that it would propose to issue in response to Alton Steel's request. The permit is intended to identify the applicable rules governing emissions from the melt shop and the steel mill and to set limitations on these emissions. The permit is also intended to establish appropriate compliance procedures for the mill, including requirements for emissions testing, continuous monitoring, recordkeeping, and reporting.

II. DESCRIPTION

A construction permit was issued to Laclede Steel on June 30, 2000, that authorized physical changes to and increased throughput for Furnace No. 7. The improvements to Furnace No. 7 included: 1) Replacement of a capacitor bank in the electrical power supply system for the furnace; and 2) Replacement of the oxy-fuel burners of the furnace with direct oxygen injection and a post combustion system. As is apparent from the proposed changes to the furnace, in addition to the heat provided by electricity, Furnace No. 7 is equipped with fuel-fired burners that can supply some of the heat for melting steel scrap for reprocessing at the plant. The furnace is equipped with a fabric filter for control of particulate matter emissions.

The construction permit was issued based on the changes to the affected furnaces not triggering applicability of the federal New Source Performance Standards for Electric Arc Furnaces Constructed After August 17, 1983, 40 CFR 60, Subpart AAa. This was because the project did not qualify as a modification because it did not entail a capital expenditure, as provided by 40 CFR 60.14(e)(2). The changes to Furnace No. 7 did increase its capacity and potential annual emissions. Accordingly, Laclede Steel prepared an analysis of the change in emissions accompanying the project for various pollutants to show that it would not be accompanied by significant increase in emissions. Among other things, future steel production from the melt shop was limited to 769,600 tons/year, total. This analysis relied upon an emission decrease from Furnace No. 8, which would result from restricting the operation of Furnace No. 8 to use as a stand-by unit. Because the application showed that the net increases in emission were below the significant emissions thresholds established under the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21 and the state rules for Major Stationary Source Construction and Modification (MSSCAM), 35 IAC

Part 203, the project was not considered a major modification under these rules.

Alton Steel took over the plant from Laclede Steel, beginning operation on September 25, 2003. It has actually operated the plant at a much lower level of production than Laclede Steel. However, it wants to be permitted for levels of productions similar to those of Laclede Steel so as to be able to increase the steel output of the plant in response to the demand for its products.

The revised construction permit requested by Alton Steel would continue to cover the modifications to the melt shop made by Laclede Steel. However, it would also address operation of the steel mill as planned or desired by Alton Steel including allowing Furnace No. 8 to operate as a main production furnace and increasing the limit on steel production from the melt shop to 786,000 tons per year. The revised permit would be based on an updated netting analysis for the changes in nitrogen oxides (NOx) and sulfur dioxide (SO_2) emissions to reflect actual emission data for Furnace No. 7, as collected in stack tests performed in November 2000 and January 2001. The updated netting analysis would also reflect additional decreases in NOx emissions that occurred with the permanent shut down of the blooming, pipe and rod departments at the plant by Alton Steel when it took over the plant. With the requested changes, the revised construction permit still results in net emission changes that are below the significant emissions thresholds established under the federal PSD rules and the state MSSCAM rules.

The 2000 and 2001 stack tests were performed after Laclede Steel made changes to Furnace No. 7. The test showed that the general emission factors for NOx and SO_2 emissions originally used in the netting analysis understated the historical emissions of the melt shop. In addition, given the nature of the changes to the furnace, it was believed that this new data was also representative of the emissions before the changes to the furnace. This was because the permitted changes to the furnace would have affected its potential throughput or capacity but should not have affected the emission rates for SO_2 or NOx, when expressed in pounds per tons of steel. The SO_2 emission rate of an electric arc furnace is a consequence of the initial sulfur content of the scrap steel and other raw materials charged into the furnace, as then reduced by the collection of the sulfur in the flux materials, with only a fraction of the sulfur actually emitted to the atmosphere as SO_2. These aspects of the operation of the furnace were not being altered by the changes to furnace. Similarly, Laclede expected that the changes to the fuel burners in the furnace would act to reduce NOx emissions from the furnace. Also relevant was that the emission rates measured in the stack tests were within the range of typical emission rates measured at electric arc furnaces. After receiving the results of the 2000 and 2001 stack tests, Laclede Steel began discussions with the Illinois EPA about obtaining a revised construction permit reflecting better emission data. These discussions were interrupted when Laclede Steel ceased operation. Alton Steel picked up where Laclede Steel left off in this regard to pursue a revised construction permit that reflects the more accurate emission data obtained from the site-specific stack tests. Alton Steel also requested other revisions to the permit to reflect its actions to streamline the mill's operations.

III. EMISSIONS

The potential future emissions of the Alton Steel mill and the net change in emissions from the changes to the melt shop are provided below, based on the information in Alton Steel's application for a revised permit. The change in actual emissions reflects the difference between the emissions that the mill will be allowed to emit in the future and the past actual emissions of the mill, based on historical the emission factors for NOx and SO_2 from the 2001 stack test. The actual changes in emissions would be less than described below as the plant would operate below its permitted capacity and the actual emission rates of various emission units would be below the allowable emission rates.

Pollutant	Emissions (tons/year)			
	Past Actual Emissions*	Future Potential Emissions	Net Change in Emissions	PSD/MSSCAM Significant Rate
Nitrogen Oxides (NOx)	546	560	14	40
Sulfur Dioxide (SO_2)	225	249	24	40
Carbon Monoxide (CO)	981	1,072	91	100
Volatile Organic Material (VOM)	59.4	65	5.6	40
Particulate Matter (PM)	78.2	83.2	5.0	25
Particulate Matter 10 (PM10)	61.4	65.1	3.7	15
Lead	0.88	1.00	0.12	0.6

* The years 1995 and 1996 were chosen as the representative baseline years, during which period Laclede Steel produced an average of 694,640 tons of steel per year. This period was selected due to the general downturn in the steel industry in the United States in 1997 and 1998. This led to Laclede's bankruptcy in late 1998 and continued decline in steel production until Laclede ceased operation and put the plant up for sale in the Fall of 2001.

IV. APPLICABLE EMISSION STANDARDS

All emission sources in Illinois must comply with the Illinois Pollution Control Board's emission standards. The Board's emission standards represent the basic requirements for sources in Illinois. The Board has standards for sources of NOx, SO_2, CO, VOM, and PM. The furnaces should continue to readily comply with all applicable Board standards.

V. PERMIT CONDITIONS

The conditions of the revised construction permit set forth the air pollution control requirements that the modified melt shop must meet. These requirements include the applicable emission standards that apply to the plant. The permit also establishes enforceable limitations on the amount of emissions for which the plant is permitted. As previously noted, actual emissions associated with the project would be less than the permitted emissions to the extent that the plant operates at a the level of production that is lower than has been relied upon in analyzing the changes in emissions accompanying the changes to the melt shop.

The permit also establishes appropriate compliance procedures for the ongoing operation of the melt shop, including requirements for emission testing, required work practices, operational monitoring, recordkeeping, and reporting. These measures are imposed to assure that the operation and emissions of the melt shop are appropriately tracked to confirm compliance with the various requirements imposed on Alton Steel to address the potential increase in emissions from the changes to the melt shop.

VI. REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that the draft permit would meet all applicable state and federal air pollution control requirements, subject to the conditions in the draft permit.

Comments are requested on this proposed action by the Illinois EPA and the proposed conditions on the draft permit. If substantial public interest is shown in this matter, the Illinois EPA will consider holding a public hearing in accordance with 35 IAC Part 166.

KS:ks